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Immature and Adult Night Herons
Photos by Jim Rod

Observations Among The Night Herons

JOHN FAABORG
705 W. Madison St.
JEFFERSON, IOWA

In addition to receiving much enjoyment, a young man can learn a great deal about life from observing nature. Among the best areas to get views of the non-human world are the marshes. Any marsh with it's teeming wildlife is interesting, but if the marsh has a heron rookery, it's superb! I have had the opportunity to observe a Black-crowned Night Heron rookery at Goose Lake for several years; during this time I have made several observations that I would like to share.

Goose Lake, located six miles north of Jefferson, owes the existence of its night heron colony to the lake's strange history. In the 1920's the beautiful marsh was drained in an attempt to farm its rich soil. The result was 500 acres of land too wet for farming but too dry to be a marsh. In the 1930's the CCC planted several groves of trees in the area, including one that stretched for over one-fourth mile on the lake-bed. When the lake was restored in the 1950's, this large grove was flooded and provided an excellent nesting area for the Black-crowned Night Heron.

The Black-crowned Night Heron begins arriving at Goose Lake in mid-April and almost immediately the birds can be seen at the rookery site. By May, nest building has begun, with the first young appearing in mid-June. The rookery contains all levels of development during the summer, and night herons have been observed building nests and laying eggs as late as August. Last summer, young birds could be observed in the rookery from the second week of June until the third week of September. The most activity in the rookery is probably during late July, when we have counted over 150 active nests in the colony. Soon after the last young are gone the birds head south.

The young night heron, with its dull brown and gray plumage, is anything but striking. The eggs, though, are a lovely powder blue, surprisingly beautiful to contain such homely young. The newly hatched birds are covered with a light

brown down and are sightless. By tapping the tree with a paddle one can often get these very young birds to awaken and start giving their feeble cry for food. As soon as they are large enough, the young birds climb from the nests and spend their time in the high branches.

Infant mortality among the young herons is quite high. The raccoon is said to relish the eggs and young. Many other birds die because of their awkwardness. In climbing about in the trees the birds often fall, either due simply to their lack of ability, or because the branches break under the bird's weight. To break their falls, the birds often try to grab hold of branches with their bills. Some birds can do this and successfully pull themselves upright. Many young birds, though, unable to keep good control of their over-sized beaks, end up hanging themselves. It was a rather common sight to see dead birds of all sizes hanging with their beaks wedged in the fork of some branch, or their necks wrapped around one. In one case a nearly full-grown bird was observed to have died when it caught its ankle in the fork of a branch and fell forward, snapping its leg and leaving the bird to hang until it died. A few of the birds that fell were luckier. Some were observed to fall among the many dead branches and trunks below the nests. On one occasion, a friend and I were trying to maneuver the canoe through the trees while the curious herons peered at us from above. One bird became too involved in what was going on below, lost his balance, and fell. My companion's shout of alarm came just in time for me to see the young bird shoot past a few inches from my head and splash into the water beside the canoe. He resurfaced a few seconds later, swam a few feet away, climbed onto a floating branch, and started to work his way back up to the top, using both his feet and bill.

In observing the feeding habits of the night herons, it was this author's belief that the parents could remember their young much better than the young could remember their parents. In the search by the parents for his or her young, every young bird in the vicinity tries to get the food. In most cases the adult will pass by several friendly young birds before finding his own young. The meeting of parent and child is a noisy affair - the young bird screaming for food and the parent bird asking for quiet from the youngster. When the parent bird finally gets down to the feeding, it does so by regurgitation. This process is quite messy, and spilled food was abundant under the nests.

The night heron got its name from its nocturnal habits. I had an excellent opportunity to observe these habits last August 14. About 1 a.m., Dave Bucklin, Dick Knight, and I decided to visit Goose Lake. It was a perfect night - clear and moonless, so that each star shown like a diamond. A southerly breeze added to the romance of the evening without muffling any of the night sounds. At Goose Lake, the movement of the herons could be traced by their calls - first, a harsh kraak in the distance; then closer and closer until the bird was above us; then it could be heard as it moved out across the lake; finally, we knew the bird had made it when we heard the racket that came with finding the right child to feed. That night the birds were continually moving back and forth between the rookery and the feeding areas on the lake or on near-by creeks.

The last observation that I'd like to share with you is one that was obtained only with a great amount of human sacrifice on my part. (Or was it a foolish faith in my fellow man?) On July 28, 1966, I was caught in a thunderstorm at the colony. As I sat in the canoe, watching it fill with water and feeling myself become colder and colder and wetter and wetter, I noticed that the herons were

doing much the same thing. Each one was sitting stoically and facing the wind. Whereas I muttered a few things about the weatherman and his "fair" weather, these birds were perfectly silent and took the storm in stride. I was filled with admiration for these creatures that could take such terrible weather without even one complaining squawk. Ever since then I've tried to be a little bit more like the herons when it came to complaining about the elements.

I've tried to give you a few of the observations I've made in the hours I have spent at the colony. My methods weren't scientific, but anyone observing nature can make observations, and he can share these with people who share his interests. Yet, a story such as this, even if it were a good one, would not be the way to learn about the night herons. Only by seeing a rookery can a person really get to understand one. And the memories of any such visit will last much longer than the memory of any story such as this.

Upper photos by author, lower by Jim Rod.

Report of the 45th Annual Convention of the Iowa Ornithologists' Union, May 12-14, 1967

DR. MYRLE BURK
R.R. 2
WATERLOO, IOWA

The members of the Iowa Ornithologists' Union met at the Iowa State University, Ames, Iowa, May 12-14, 1967, for the 45th annual convention. Dr. Milton Weller acted as Chairmm of the Arrangements Committee; Mrs. Charles C. Ayres, Jr. as Chairman of the Program Committee. At the informal gathering Friday evening in the Museum of the Science Building, the genial atmosphere of the meeting began. Friends, old and new, exchanged birding experiences, planned birding hikes, gossiped, and enjoyed the delicious refreshments served by Mrs. Milton Weller, Mrs. Edwin A. Kline and Mrs. Donald F. Grabe, our gracious hostesses.

Saturday morning, following registration, the members convened in the Pioneer Room. Dr. Oscar Tauber, Chairman of the Department of Zoology and Entomology of Iowa State University, who also once qualified as a bird watcher, cordially welcomed the members of the Union to the campus. He recalled that when he came here thirty-five years ago, birds were then seen at Brookside Park, Pammel's Woods, the golf course, the railroad track and an abandoned orchard. Through the years ornithology was taught by Dr. Harry Knight, Dr. Guthrie and Dr. George Hendrickson. In early days about twenty students enrolled in the ornithology class; today Dr. Weller teaches four or five sections. In conclusion, he expressed the desire that we have good times, good weather and achieve the longest list of birds.

Myra Willis, President, responded to the cordial welcome and expressed gratitude to Dr. Weller and Mrs. Ayres and their assistants for their efforts to make this meeting a success. She welcomed members and friends to the meeting and wished them a good time.

PROGRAM

Experiences with Bluebird Nestboxes, Stephen Patterson

Steven Patterson, student of Dr. Weller, discussed his observations of Bluebird nestboxes. In 1965 he built 150 Bluebird houses using boards from fruit trays. This lumber is a very tough wood with a rough finish; it lasted for up to three years of use. The dimensions of the houses were 4-1/2x4-1/2x9 inches. Ninety were placed on wooden fence post along roads. Habitats used were intensively farmed areas, along streams (the Boone River), timbered areas and farms with woods. Each Saturday and Sunday the houses were checked, entailing driving 8000 miles during the study. If damaged, or if the nest had been damaged or destroyed, the house was removed. If the house had been unoccupied for fifteen consecutive weeks, it was taken down. (see next article - ed.)

Birds of Kauai and Lehua, Hawaii, John Bowles.

John Bowles early life was spent in Honolulu; he had firsthand experience with birds of Hawaii. Later at the University of Washington, he became a student of Dr. Frank Richardson. When Dr. Richardson received a grant to do research on the birds of Hawaii, John Bowles was chosen as his assistant.

Early ornithological research was marked by the comprehensive work of Capt. Cook (1890-1903). In 1944 George Munro published "Birds of Hawaii".

Except for his extensive field work no other studies have been done since. The status of the Honeycreepers and other native birds was virtually unknown. Based on this field work he concluded that all species were still on the Islands, but very scarce.

Confusing Iowa Birds, Peter C. Petersen, Jr., W. M. Lonnecker.

Using two projectors, the similarities and differences of species were compared: for example, the Sharp-shinned Hawk and the Cooper's Hawk. Also shown were immature phases of species, such as the Screech Owl and the Great Horned Owl. More than one hundred-thirty slides were shown, including sandpipers, kinglets, vireos, warblers, woodpeckers and flycatchers. Time was a limiting factor in the presentation of this paper due to the fact that the program ran quite late.

Studies of Cliff Swallows Nesting in Iowa, Frances Phillips and John Faaborg.

Observations by John Faaborg in 1966 were in Greene and Story Counties, mostly in open country with the exception of woods along rivers. Steel culverts seemed unsuitable, but wooden culverts and wooden bridges were used. One hundred seventy typical concrete bridges were examined; 490 nests were found in 45 structures. A map showing location of bridges, etc., used by Cliff Swallows showed a tendency to build in unwooded areas. House Sparrows sometimes took over the nests of Cliff Swallows. Pigeons, Robins, and House Sparrows also built nests underneath bridges.

Frances Phillips made similar studies in Marion County.

Outdoor Iowa Roy Schultz

This interesting film protrayed nature in various parts of Iowa, the hunting of foxes in deep snow, spotted from a plane, the Wild Turkey of the Yellow River Forest, beaver dams, ant hills several feet high at Siewer's Springs, Forney's Lake during the spring migration of the Blue and Snow Geese, gathering sap from the Sugar Maple of the sugar bush county of northeast Iowa, and Rattlesnakes on a sunny ledge in early spring. This concluded the formal program.

At 6:00 we gathered in the Memorial Union for the annual banquet. The tables had been beautifully arranged by the hostesses, Mrs. Milton Weller, Mrs. Edwin R. Kline and Mrs. Donald F. Grabe. A delicious dinner was enjoyed. William M. Lonnecker, Bettendorf, presented an interesting film of his arrangement and photography, "Island of Many Moons". The word "moon" refered to the Indian name for month; the story centered on the phases of life of woods and fields during each "moon" of the year. This audience was the first to see this truly good film; it was very enthusiastically received.

FIELD TRIPS

Field trips were optional Saturday morning. Due to the crowded time schedule Saturday morning, the Executive Council decided last year to give up the planned field trip Saturday morning; morning birding on that day is optional and members are informed of the good sites. Many members took advantage of the influx of warblers during the weekend, visiting Brookside Park, Squaw Creek and the Campus, which proved to be very good.

Two Sunday morning trips were arranged: one to the Ledges State Park and the other to Goose Lake and nearby areas. Yawning birders met at the Pancake

House at 5:00 a.m. Sunday morning for a breakfast of pancakes; they dispersed about 6:00 o'clock for the count. Coffee and doughnuts were a welcome break at mid-morning. Later, upon return, the following birds were named as seen Sunday.

Horned Grebe, Eared Grebe, Pied-billed Grebe, Great Blue Heron, Green Heron, Black-crowned Night Heron, Yellow-crowned Night Heron, American Bittern, Canada Goose, White-fronted Goose, Snow Goose, Blue Goose, Mallard, Gadwall, Pintail, Green-winged Teal, Blue-winged Teal, American Widgeon, Shoveler, Wood Duck, Redhead, Ring-necked Duck, Lesser Scaup, Bufflehead, Ruddy Duck, Common Merganser, Turkey Vulture, Cooper's Hawk, Red-tailed Hawk, Broad-winged Hawk, Sparrow Hawk, Bobwhite, Ring-necked Pheasant, Virginia Rail, Sora, Common Gallinule, American Coot, Semi-palmated Plover, Killdeer, Golden Plover, American Woodcock, Spotted Sandpiper, Solitary Sandpiper, Greater Yellowlegs, Lesser Yellowlegs, Pectoral Sandpiper, White-rumped Sandpiper, Baird's Sandpiper, Least Sandpiper, Dunlin, Long-billed Dowitcher, Stilt Sandpiper, Semi-palmated Sandpiper, Marbled Godwit, Hudsonian Godwit, Wilson's Phalarope, Ring-billed Gull, Franklin's Gull, Forster' Tern, Black Tern, Mourning Dove, Yellow-billed Cuckoo, Great Horned Owl, Barred Owl, Whip-poor-will, Nighthawk, Chimney Swift, Ruby-throated Hummingbird, Belted Kingfisher, Yellow-shafted Flicker, Red-bellied Woodpecker, Red-headed Woodpecker, Yellow-bellied Sapsucker, Hairy Woodpecker, Downy Woodpecker, Eastern Kingbird, Great Crested Flycatcher, Eastern Phoebe, Yellow-bellied Flycatcher, Least Flycatcher, Eastern Wood Pewee, Horned Lark, Tree Swallow, Bank Swallow, Rough-winged Swallow, Barn Swallow, Cliff Swallow, Purple Martin, Blue Jay, Common Crow, Black-capped Chickadee, Tufted Titmouse, White-breasted Nuthatch, Red-breasted Nuthatch, House Wren, Long-billed Marsh Wren, Short-billed Marsh Wren, Mockingbird, Catbird, Brown Thrasher, Robin, Wood Thrush, Swainson's Thrush, Gray-cheeked Thrush, Veery, Eastern Bluebird, Ruby-crowned Kinglet, Cedar Waxwing, Loggerhead Shrike, Starling, Bell's Vireo, Yellow-throated Vireo, Solitary Vireo, Red-eyed Vireo, Philadelphia Vireo, Warbling Vireo, Black-and-white Warbler, Prothonotary Warbler, Golden-winged Warbler, Blue-winged Warbler, Tennessee Warbler, Orange-crowned Warbler, Nashville Warbler, Parula Warbler, Yellow Warbler, Magnolia Warbler, Cape May Warbler, Black-throated Blue Warbler, Myrtle Warbler, Black-throated Green Warbler, Blackburnian Warbler, Chestnut-sided Warbler, Bay-brested Warbler, Blackpoll Warbler, Palm Warbler, Ovenbird, Northern Waterthrush, Yellowthroat, Wilson's Warbler, Canada Warbler, American Redstart, House Sparrow, Bobolink, Eastern Meadowlark, Western Meadowlark, Yellow-headed Blackbird, Red-winged Blackbird, Baltimore Oriole, Common Crackle, Brown-headed Cowbird, Scarlet Tanager, Cardinal, Rose-breasted Grosbeak, Indigo Bunting, Dickcissel, Purple Finch, American Goldfinch, Rufous-sided Towhee, Savannah Sparrow, Grasshopper Sparrow, Vesper Sparrow, Lark Sparrow, Tree Sparrow, Chipping Sparrow, Clay-colored Sparrow, Field Sparrow, Harris' Sparrow, White-crowned Sparrow, White-throated Sparrow, Lincoln's Sparrow, Swamp Sparrow, Song Sparrow. Total: 173 species - a new record.

BUSINESS MEETING

At 3:15 P.M., Myra Willis, President, called the convention to order for the business meeting.

The annual financial report for 1966-67, was read by the Secretary-treasurer, Myrle M. Burk:

Cash on hand, May 13, 1966	$1473.26
Income, 1966-1967	1788.83
Total	$3262.19
Expenses	2197.81
Balance	1064.38
Balance, National Bank of Waterloo, 5-8-67	$ 952.99
Deposited, 5-9-67	106.00
Membership dues received 5-11-67	3.00
Cash on hand 5-11-67	2.39
Total	$1064.38
Life Membership Fund, Time Certificate, National Bank of Waterloo	$ 250.00
Deposit, Home Savings and Loan, Waterloo	$ 719.40

Income itemized:

Membership	$1346.00
Brassards	15.00
Decals	12.00
Pictures of Phoebe	1.25
Field Check Lists	22.65
Postage returned	.22
Conventions	371.24
Grant's Code List of Birds	10.35
Iowa Bird Life, Single Copies	4.59
Interest, Life Membership Fund	5.63
Total	$1788.93

Expenses itemized:

Postage	$ 16.75
Engraving, etc.	168.14
Editorial, Peter C. Petersen	75.00
Typing Copy	52.75
Printing	562.30
Brochures	148.00
Conventions	877.01
Stationery	46.52
Investment, Life Membership Fund	250.00
Bank Service charge	2.02
Total	$2197.81

Membership:

Regular	300
Sustaining	42
Contributing	7
Junior	15
Life	3
Honorary	8
Charter	4
New Members	39

Moved by Woodward Brown that report be accepted; seconded by Albert Berkowitz. Motion carried. Moved by Woodward Brown that reading of the minutes of the business meeting, May, 1966, be dispensed. Seconded by Dr. Robert Vane. Motion carried. Mrs. Paul Niemann, 2826 Sunnyide Ave. Burlington, Iowa, again requested that the owner of the jacket loaned to Mr. Niemann at the meeting at Vinton, Iowa, please write her to claim the jacket. A letter of greeting from Mrs. Margaret Jones was read by the Secretary.

The president, Myra Willis, appointed the following Committees: Nominating: Judge Charles C. Ayres, Jr., Dorothy Brunner, Chairman, and John Paul Moore. Resolutions: C. Esther Copp, Chairman, Darrell Hanna and Susan Atwell. Auditing: Dr. Robert Vane. Compilation: Dr. Martin L. Grant.

President Willis announced that the Fall Get-together will be at Springville State Park, near Guthrie Center, September 9-10, 1967. Mr. and Mrs. Wayne Partridge are hosts. The Izaak Walton League of Vinton had issued an invitation to hold all future fall meetings at their club house. Since it is the policy of the organization to hold meetings in as many parts of the state as possible, we cannot accept this gracious invitation. John Osness referred to the law pertaining to the observation of Bird Day in Iowa and cited the need of notifying teachers and superintendents of this law.

Myra Willis called for the report of the editor of IOWA BIRD LIFE. Peter C. Petersen reported that printing costs had increased. At this point Dr. Vane interrupted with the news that the newspaper plant, the Mount Vernon Hawkeye Record had been completely destroyed by fire the previous evening. Peter resumed reporting that this would mean the loss of the cover plate and an article by John Faaborg; losses would probably be covered by insurance.

The President called for the Librarian's report. Dr. Martin L. Grant, Librarian, reported that with the aid of Dr. Robert Vane, the library was moved to the State College of Iowa last fall. At present there is no place for the library, but in the fall of 1968 the new science building will be completed; in it the library may be housed. Dr. Vane suggested that a better way be found of addressing mail such as the journal and letters to all members. Judge Ayres suggested, in order to overcome the increase in the cost of printing, an effort be made to increase the membership. Each member is urged to get a new member. Dr. Vane moved that the President appoint a Committee to assist Peter C. Petersen in the investigation for a possible new printer for IOWA BIRD LIFE, and further the Committee to make recommendations for the magazine. Seconded by Mrs. Vane. Motion carried. The President called for volunteers for this committee. Mrs. Russell Nickolson suggested that the policy to increase the membership be referred to the members at the banquet this evening. The suggestion was accepted. Adjournment.

SUNDAY AFTERNOON

Following the luncheon, Sunday, May 14, President Myra Willis called the convention to order for the final business meeting.

The suggestion was made that recognition of new members should be made in the IOWA BIRD LIFE; this suggestion won favor.

President Willis again announced the fall meeting to be at Springbrook State Park, September 9-10, 1967. The annual Convention for 1968 will be at Ottumwa May 10-12, 1968. Judge Charles C. Ayres, jr., extended the gracious invitation. The following members of the Committee for the printing of Iowa Bird Life and its policy were appointed by President Willis: Albert C.

Berkowitz, Chairman, Woodward Brown, John Paul Moore and Mrs. Robert Vane.

Following is the report of the Resolutions Committee read by C. Esther Copp, who moved that the following resolutions be adopted: Be it resolved that the Iowa Ornithilogists' Union express their deepest thanks as follows:

1. To the officers of I.O.U., namely, Miss Myra G. Willis, President, Mrs. Chalres C. Ayres, Vice-president; Dr. Myrle M. Burk, Secretary-treasurer; Dr. Martin L. Grant, Librarian; Peter C. Petersen, Jr., Editor and to the Executive Council, namely, Mrs. Russell Nicholson, Robert L. Nickolsen, Fred W. Kent, and Dr. Robert F. Vane for their year of work and effort in behalf of our organization.

2. To Iowa State University for its gracious welcome and for providing such excellent facilities for our meeting.

3. To Dr. Milton W. Weller, most efficient chairman of local arrangements, and to Mrs. Charles C. Ayres, Jr., as Chairman of the Program Committee, we express our special thanks.

4. To the Registration Committee for their services.

5. To Mrs. Milton Weller, Chairman of the Reception and Decoration Committee, who with Mrs. Edward A. Kline and Mrs. Donald F. Grabe served graciously at both reception and coffee break and also made the rare mounted birds used as table decorations.

6. To the speakers and projectionist for our excellent program.

7. To Mr. W. M. Lonnecker, Bettendorf, Iowa, for the banquet picture and story, "Island of Many Moons".

8. To the capable leaders of various field trips.

9. To Woodward H. Brown for his able compilations of field reports and censuses of IOWA BIRD LIFE.

10. To Peter C. Petersen, Jr., for his untiring efforts as Editor of IOWA BIRD LIFE.

11. To Dr. Martin L. Grant, Librarian, who has moved the I.O.U. Library from Cornell College, Mt. Vernon, to the State University of Northern Iowa, Cedar Falls.

Respectfully submitted,
C. Esther Copp, Chr.
Darrel M. Hanna
Susan Atwell

Dr. Robert Vane, auditor of the annual record, reported that the book was in good order and moved that his report be accepted. Seconded by Mrs. Robert Vane. Motion carried.

Dorothy Brunner, Chairman of the Nominating Committee reported that the present officers be nominated; she moved that nominations cease and the secretary be instructed to cast a unanimous ballot. Seconded by Woodward Brown. Motion carried.

Moved by Dr. Vane that the Convention adjourn. Seconded by Mrs. Peter C. Petersen, Jr. Adjournment.

Attendance:

AMES: Miriam Bond, Michael M. Burns, Charles J. Ellis, A. J. Englehorn. Leigh Fredrickson, Mr. and Mrs. W. C. Francis, Mrs. Marjory J. Kline, R. Dean Oviatt, Gerald B. Pettinger, James Rod, Myron A. Swenson, Christian Thomsen, Dr. and Mrs. M. W. Weller.

BETTENDORF: Mr. and Mrs. W. H. Lonnecker, John Lonnecker, Norman Ward, Jr.

CASTALIA: Mr. and Mrs. Roy Schultz.

CEDAR FALLS: Phyl Bahr, Mrs. Lloyd Collins, Francis Crouter, Tracy Foote, Gary Garton, Dr. Martin L. Grant, Lyle Harrison, Gene Healy, Craig Kern, Jeff Llewllyn, Lyle Morrison, Larry Schlawin, Mrs. Charles Schwanke, Maxine Schwanke, Joe Smith, Mrs. K. A. Velie.

CEDAR RAPIDS: Mr. and Mrs. James W. Clifton, Eleanore Fullerton, Dr. Karl E. Goellner, Richard Lutz, Mrs. Forrest Millikin, Carol Ruther, Lillian Serbousek, Dr. and Mrs. Robert Vane, Myra Willis.

DAVENPORT: Mr. and Mrs. Peter C. Petersen, Jr.

DES MOINES: Albert C. Berkowitz, Mrs. A. J. Binfeld, Mr. and Mrs. Dwight Brookes, Mr. and Mrs. Joseph Brown, Woodward H. Brown, Mrs. J. A. Downing, Mr. and Mrs. Lester Haskell, Florence Hutchison, Mrs. Jay Lynch, Mrs. Russell Nicholson.

FORT DODGE: Susan H. Atwell

GOLDFIELD: Dean Roosa

IOWA CITY: Margrieta Delle

GRINNELL: Mildred Stewart, Helen T. Stewart

JEFFERSON: John Faaborg

JEWELL: Martha Larson, Mrs. Emil Stout

KILLDUFF: Ann Moore

MARION: Mrs. Lucille Liljedahl, Sue MacDougal

MARSHALLTOWN: Dorothy A. Brunner, Mrs. L. R. Grimes, Mr. and Mrs. Homer Rinehart.

NEWTON: Mr. and Mrs. John P. Moore, Lucille Moore.

ODKALOOSA: John Bowles, Mr. and Mrs. Keith D. Layton.

OTTUMWA: Judge and Mrs. Charles C. Ayres, Jr., Mr. and Mrs. M. K. Hallberg.

PLEASANTVILLE: Mrs. Gladys Black, Frances Phillipps.

REINBECK: Mrs. John Ehlers.

SIOUX CITY: Mrs. Helen G. Barrett, Mr. and Mrs. P. B. Davison, Mr. and Mrs. Darrell M. Hanna, Mr. and Mrs. A. D. Kirkpatrick, Mr. and Mrs. George Marsh and daughter, Robert Nickolsen, Mr. and Mrs. Garland Roose.

WATERLOO: Dr. Myrle M. Burk, Mrs. Ruth E. Halliday, Bob Maloy, Mr. and Mrs. John M. Osness, Randi and April Osness.

WHEATLAND: C. Esther Copp.

WOODWARD: Richard H. Guthrie.

LAMOILLE, MINN.: Pauline Wershofen.

A Study of Bluebirds Nesting in Central Iowa -- 1965

STEPHEN PATTERSON
5256 Maney House
Knapp Hall, Iowa State Univ.
AMES, IOWA

For several years there has been considerable discussion by popular magazines, newspapers, and ornithology clubs about the reduction in the Eastern

Bluebird (Sialia sialis) population. Much of the blame has been placed on the loss of nesting sites due to human encroachment and to the spread of the House Sparrow (Passer domesticus) and the Starling (Sturnus vulgaris).

The primary objective of this project was to determine the utilization of nesting boxes by Bluebirds and House Wrens (Troglodytes aedon). The other objective was to attempt to increase the Bluebird population in my locality. Although there are no accurate records for the study area, Bluebirds have not been common summer residents for some years. Although they were fairly common as migrants, few appeared to stay. Only an occasional individual or pair had been observed by the author prior to the study.

PROCEDURE

From 1962-1964, I erected a small number of houses near Perry, in central Iowa, to determine whether bluebirds would increase when nest sites were available. Little nesting resulted at these sites. During the summer of 1965 I increased the number of boxes and the census area to test bluebird nest-utilization on a larger scale.

A slightly modified box was used. The inner dimensions were the same. However, attached to the front and covering the hole was a tubular projection. This tube was rectangular with dimensions of 1-1/2 x 2 inches and was 4-1/2 inches long. With the addition of this tube it was hoped that predators such as cats would not be able to reach through the elongated tube.

All boxes were constructed by the author from fruit boxes obtained from grocery stores. The end boards of the crates were used for the base, front, and back, plus the two sides of the tube. The thin boards were used for the rest of the box and the upper and lowere surfaces of the tube. At the time of construction there was some fear the wood might be inferior and not withstand the weather, or that a predator would be able to tear apart the box. However, neither was a problem.

Each box was checked once weekly. It two consecutive nesting attempts failed in the same box, the box was removed. All boxes that were vacant for fifteen weeks, and all damaged boxes, were removed. Some of the immature bluebirds were banded under the supervision of Mr. Eugene Brady of Perry, Iowa.

Ninety-two bluebird boxes were erected in the spring of 1965. These boxes were always placed on wooden fence posts. All but seventeen were placed along roads; these seventeen were placed in the timber surrounding the writer's home.

STUDY AREA

Two separate areas were included in the census area. One was in Boone County, Union Township in sections 22, 26, 27, 34, and 35. The other was in Dallas County, in sections 1, 2, 3, 4, 5, 12 and in Spring Valley Township in sections 21, 22, 26, 27, 28, 30, 33, 34, and 35.

In Dallas County the census area included parts of the Raccoon River Valley. This area was heavily timbered with many steep hills and numerous ravines. Most of the Boone County area was gently rolling land extensively farmed except around small streams.

RESULTS

April 25th marked the first record of bluebirds carrying nest material into a box and August 29th was the termination of the last nest.

The census area was divided into three general land types for comparison of nesting results. Land that was nearly all cultivated fields within approximately a quarter of a mile was classified as flat-farm ground. Eighteen boxes were placed in this land type. Most of the fields were corn or beans but some oats, hay, and diverted acres also were present.

A summary of nests in this land type are shown in Table I. Bluebirds were by far the most common of the three species recorded nesting. Nearly every nesting site was within close range of either a timbered or a wooded, pastured area, however. Boxes placed out of sight of trees were not used. Eight of the eighteen boxes (44%) were occupied by bluebirds at least once while two of the eighteen boxes (11%) were utilized by wrens.

Both bluebirds and wrens showed approximately equal nesting success and egg mortality--approximately fifty percent. Nests were often destroyed by some type of "small" mammal. Some of the boxes containing destroyed nests had claw marks on them; however, many exhibited no signs that would indicate the cause of destruction.

Twenty-four boxes were placed in habitat classified as hilly-timbered land. There were seldom any cultivated fields in this type of land. Usually the topography was moderately to steeply sloping with trees and brush overgrowing large portions. In some cases the land was hilly pasture with few trees and little underbrush.

As Table II indicates, bluebirds were not common.

Table I. Nest box utilization on intensively farmed land - 18 boxes.

Species	Nesting attempts	Eggs layed	Eggs hatched	Egg mortality	Young reared
E. Bluebird	10	47	39	46.8%	25
H. Wren	2	14	14	50.0%	6-7
B.-c. Chickadee	-	-	-	-	-

Table II. Nest box utilization on timbered land - 24 boxes.

Species	Nesting attempts	Eggs layed	Eggs hatched	Egg mortality	Young reared
E. Bluebird	9	43	42	41.8%	25
H. Wren	27	163	111	36.8%	103
B.-c. Chickadee	2	13	13	0.0%	13

Table III. Nest box utilization on partially farmed and timbered land - 50 boxes.

Species	Nesting attempts	Eggs layed	Eggs hatched	Egg mortality	Young reared
E. Bluebird	28	118	105	19.5%	95
H. Wren	25	144	95	50.0%	72
B.-c. Chickadee	1	6	6	0.0%	6

Wrens dominated this area with three times as many nesting attempts as

bluebirds. Of the twenty-four boxes placed, seven were used at least once by bluebirds (29%) and seventeen were used at least once during the course of the summer by wrens (71%). Nesting success was rather lopsided. Only 22% of the bluebird nesting attempts were unsuccessful. However, forty-eight percent of the nesting attempts made by wrens were unsuccessful. Again, the egg mortality was fairly similar---21% of the bluebird eggs were destroyed as compared to 26% for wrens. Small mammals, and possibly cats, were apparently the main predators.

The thrid type of habitat was partially farmed and partially timbered or pastured areas. The land was usually gently rolling with fields surrounding timbered creeks or pastures. Usually, there was a moderate covering of trees and undergrowth.

Bluebirds made more nesting attempts than wrens, although the total number of eggs laid by wrens was greater. Bluebirds nested in twenty-three of the fifty boxes placed (46%) while wrens nested in sixteen (32%). When considering nesting success, bluebirds were definitely more successful than wrens (Table III). Forty-eight percent of the wren nests were destroyed while only twenty-five percent of the bluebird nests were unsuccessful. Only 20% of the bluebird eggs were destroyed as compared to 50% of the wren eggs.

Black-capped Chickadees (Parus atricapillus) rarely used boxes. The number of nesting attempts was so small (three) that no summary is given.

DISCUSSION

House Sparrows were the biggest problem encountered in this project. From the first week of the census until the second week of August nests of the sparrow were found in nesting boxes. Over the course of the summer a total of 157 nests were removed containing 264 eggs. It was often difficult to rid a box of sparrows. One box had a sparrow nest removed from it 14 times in 14 weeks. Often the boxes were used as roosts by sparrows and became covered with droppings. None of these nest boxes was used by other birds.

Another problem connected with this project was that of vandalism. Although the number of boxes destroyed was not large (12), it did make up a considerable percentage. Four were destroyed by guns, two were stolen, and the rest were damaged by other means. Wasps were also a small problem. Several boxes contained nest of vespid wasps. Any box which was occupied by wasps was not used by any species of bird.

The addition of the tube on the front of the nesting boxes appeared to reduce predation in my opinion, although no valid comparison can be made with previous years because of the small number of boxes in the preceding years.

SUMMARY

The data presented indicates that bluebirds are most attracted either to farmed areas or to areas partially farmed but with some pasture or timber rather than to densely timbered areas. Forty-four percent of the boxes placed in intensively farmed areas were occupied, although these nesting attempts were within approximately a quarter of a mile of some timbered area. Forty-six percent of the houses placed in areas where farming was interspersed with timber and pasture were occupied. Compared to the latter two areas, only twenty-nine percent of the houses placed in densely timbered areas were utilized. (See Table IV)

Comparing these figures with the figures for wrens shows several differences. Few attempts were made by wrens in farm land (11%). Thirty-two percent of the boxes in partially farmed and timbered areas were occupied and seventy-one percent of the boxes in timbered areas were occupied. Although wrens and bluebirds can be attracted to land areas ranging from intensively farmed land to heavily timbered land, each species showed a nesting preference for specific areas. Wrens were most successful in hilly timbered areas. On the other hand, bluebird boxes placed in partially farmed and partially timbered areas would be most beneficial to the bluebird.

Table IV. Bluebird nesting results by area for successful and unsuccessful nesting attempts.

	Eggs layed		Eggs hatched		Young reared		Nesting attempts	
	S*	U**	S	U	S	U	S	U
Timber	34	9	33	9	25	--	7	2
Farmed-Timbered	98	20	96	9	95	--	21	7
Farmed	28	19	26	13	25	--	6	4

*Successful nests **Unsuccessful nests

Some Observations On The Effects Of A Growing City On Its Birdlife

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We have lived at the above address since September 1934. At that time this city was only half the size that it is today. Our home was then located near the edge of the city. It was only a short walk to an undeveloped area where birds were plentiful, especially during the spring migration period. Across the street there was, and still is, a city park which, no doubt, helped and still helps the bird population around our home. Beyond this park a narrow strip of residences separated us from another undeveloped area, beyond which were the woods along the Cedar River.

I would very much like to give more definite information concerning the birds about our house from the very first day that we occupied our present home. However, we were engaged in two activities that prevented this. First, we had to make a living which was no small matter during the 1930's' and second, we were busy remodeling our new home, employing mostly our own efforts. It was not surprising, therefor, that we failed to keep any written bird records during the first few years of ownership. Yet, being dedicated bird-watchers, we did make certain observations that we can remember even to this day.

Fortunately only a few years went by before I conceived the idea of keeping a written record of the species of birds that we observed on our little plot of ground. In order that such a list could appear more impressive I permitted

myself the privilege of recording those birds which flew over our place as well as those that actually set foot on our land and trees and shrubs and feeders. This made it possible for us to record such birds as Crows, Purple Martins, Nighthawks, Chimney Swifts, and others that I might not otherwise have had the privilege of recording. We thus were able to record a small flock of Whistling Swans that flew over our place in the spring of 1951. And I might have been able to list Canada Geese also had I allowed myself the liberal choice of listing sound or vocal identifications. However, I denied myself such a liberty and that bird is not found in this list of observations.

Over the years the immediate neighborhood has remained much the same. The chief change has been the loss of some trees. Some Carolina poplars have been removed, and at our own place there has been the loss of three large black oak trees. However, other trees, including evergreens, had already been planted, and these soon took their places. The principal change at our place was the discontinuance of our goldfish pool which probably attracted a goodly number of birds. We abandoned this pool shortly after we took up the idea of wandering to other parts of the country each year during the summer, and for other reasons not relevant to this report.

Farther away from our own neighborhood other changes occurred in the course of time. There came a time when the undeveloped areas became developed by being converted into residential sections with homes and mowed lawns and fewer trees. In short order we were no longer within walking distance from any undeveloped area, nor were we any longer near the edge of town. Instead we found ourselves farther from the city limits and good bird habitat than we were from the business section of the city. The former undeveloped areas were rather rapidly lost to many birds. In additon the river banks have been "beautified," which means that the undergrowth and the dead trees and limbs have been removed along with many vines and much other plantlife. Now these river banks look quite parklike, but for some reason the same birds aren't there any more, and consequently they don't appear at our place as formerly.

The unimproved areas with their environment of trees, shrubs, bushes, high grass, and herbaceous plants provided a very good rodent habitat. Rabbits, mice, and squirrels -- both tree squirrels and ground squirrels -- were sufficiently plentiful to attract bird predators such as hawks and owls. By the same token these areas provided proper habitat for ground-nesting birds and for those birds that nested near the ground in small trees or shrubs as well as those that used tangled vines and brush. Even those that needed dead trees and limbs could be accomodated. Also there was provision ready-made for those birds that required cavities in which to nest. As a final provision there was cover and food for Bobwhites and for even a few Pheasants since there was a small corn field in the nearest area.

Although we never saw any hawks at our home-site, we did have visits from the Screech Owls and the Barred Owls. The presence of Screech Owls around our immediate neighborhood was only of short duration and then they disappeared. But the presence of the Barred Owls at our home-site and in the park was constant even after the nearest unimproved area was converted into a residential section. It was not until the "cleaning up" of the river banks that we finally lost the Barred Owl visitations.

We had Bobwhites in our yard and in the park over a number of years. Also we had one visitation from a male Ring-necked Pheasant in the year

BARRED OWL

BOBWHITE

Sketches by the author

1935. Both these birds have long ago disappeared from our part of the city.

The Red-bellied Woodpeckers used to be regular visitors at our place. They appeared in the fall, were around all winter, then left for the woods in late winter or early spring. We used to have them coming to our feeders as regular customers. The loss of the dead trees and limbs without doubt robbed them of proper nesting places and it was necessary for them to move to a more suitable environment. As a result these attractive birds are no longer with us.

The Hairy Woodpeckers have also virtually disappeared so that now a visitation is only casual. We see Downy Woodpeckers slightly more often but there visits are much fewer than formerly.

In other respects our winter birds are much the same except that certain ones are present in fewer numbers. The Chickadees, the Titmice, the Nuthatches, the Cardinals, the Blue Jays are present at our feeders but in limited numbers. The House Sparrows and Starlings, on the other hand, appear in greater and ever greater numbers. However, we have gained thee species of birds which at first never appeared at our feeders. One of these is the Slate-colored Junco. Formerly these birds stayed in the undeveloped areas where they could find plenty of food among the wild plant seeds. With the loss of the undeveloped areas these birds were forced to come to the feeders that people are kind enough to maintain in order to supplement any natural food that they may find.

Also we have Red-headed Woodpeckers staying over the winter and coming to partake of the food they find in the feeders. For about eight years we have had three or four of these colorful woodpeckers staying over and coming to our feeders as regular customers.

Our third and latest acquisition is the Common Crow. These birds came to our feeder for the first time several years ago during a winter when heavy snow remained on the ground for a long period of time. Food unquestionably was difficult for them to get, but a few solved the problem by coming to one of our feeders where we serve suet and other similar foods.

We have come to like the Crows very much. They are quiet, they don't quarrel or fight, and they have excellent table manners. They don't waste any food and, when they finish eating, they fly away and don't hang around the feeders as do the House Sparrows.

Of the birds that are present only in the spring or summer, we must record certain losses. No longer do we see the Purple Martin, the Eastern Phoebe, the Wood Pewee, the Least Flycatcher, the Eastern Bluebird, the Cedar Waxwing, or the Scarlet Tanager. Nor do we see the many species of warblers that used to visit our place every spring at or about hawthorn - blossom time. Warblers made up at least 20% of our total list of birds on our record, so they represent quite a loss.

All the other common summer residents on our list that can tolerate city life have held up fairly well except that they appear in somewhat fewer numbers. That is, we have with us each summer Robins, Catbirds, Brown Thrashers, House Wrens, Chipping Sparrows, Goldfinches, Grosbeaks (Rose-breasted), Orioles (Baltimore), Cowbirds, Grackles, Flickers (Yellow-shafted), and Mourning Doves.

Certain migrants still appear regularly. Each spring we see the Yellow-bellied Sapsucker, the Hermit Thrush, the Swainson's Thrush, and occasionally the Gray-cheeked Thrush. The Ruby-crowned Kinglet comes through as

do a few warblers such as the Ovenbird, the Redstart, and the Myrtle Warbler. The White-throated Sparrow still appears each spring and fall, but other migrants are rare or absent. There is a strange paradox connected with the Rufus-sided Towhee. This bird, as far as we know, had never appeared in our yard during the time that the unimproved areas existed. Now that these areas no longer prevail the towhee appears at our home-site as a spring and fall migrant. It seems that we will have to conclude that, in general, birds don't like the city. We could conclude also that petunias and zennias are poor substitutes for gentians and shooting stars and trilliums. With the loss of the undeveloped areas, one would suppose that there would be a resultant loss of rodent population. Yet there is a super-abundance of tree squirrels in the park across the street. Just recently, after a light fall of snow during the night, I saw numerous rabbit tracks in our yard in the morning before the snow had become otherwise disturbed. It is almost inconceivable that rabbits can maintain themselves in a city, but they are able to do so. Also after a recent thaw I noted numerous mouse tunnels that were revealed by the thaw. I was surprised by the number. With the absence of the hawks and owls the only predators now in operation are the ownerless cats that prowl the alleys and back yards. Perhaps they aren't the right kind of predator for they do an indifferent job of controlling the mouse population, but appear to do a rather efficient job of controlling the bird population except among the House Sparrows and Starlings.

Of the total list of birds that have appeared at our home-site fourteen have been casual visitors and might be expected not to appear again. Of this same list twenty-eight species have not been seen since the undeveloped areas have disappeared. Formerly these species were either regular or fairly regular migrants and summer residents: now they can be considered as lost to the city. Only forty-four species on this list are either summer residents or migrants that appear with customary regularity, but in fewer numbers. The status of the last species observed cannot be assessed.

Over the period intervening between September 1934, we have listed eighty-seven species of birds that have appeared at our home-site. Whether that is a creditable record or not, I am unable to judge. Strange to say our last record was of a Red-winged Blackbird on April 8, 1966. In our list of observations it appears as follows:

87. Red-winged Blackbird -- April 8, 1966 -- I saw this bird as he flew up from the ground and perched in our white oak tree. He must have been a young male as the red patches were quite restricted and lacked full color.

I saw this bird again on May 14, 1966 as I was mowing the lawn.

Starlings and Health

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IOWA CITY, IOWA

Starlings, (Sturnus vulgaris) have caused significant health problems and general nuisances in many communities. Millions of starlings, in addition to associated species of birds, are found living in association with the human population. Concentrated roosting of birds results in accumulations of feces, and predisposes to the growth of the fungus Histoplasma capsulatum, the etiologic agent of histoplasmosis in man.

Various methods, from colored balloons to poisons and explosives, have been used in attempts to remove the starlings from their roosting sites [1]. Workers at Pennsylvania State University successfully used the recorded "distress call" of the starling as a repellant, by amplifying and broadcasting it from a sound truck.[2]

In January, 1964, a major starling and sparrow problem existed near University Hospitals in Iowa City (see "A" in Figure 1). Again in March, 1965, thousands of starlings and blackbirds roosted in a wooded area in University Heights (see "C" in Figure 1). The recorded "distress call" of a starling was used to remove the birds from their roosts.

Iowa City and the adjacent communities of University Heights and Coralville are located in Johnson County, in southeastern Iowa. The topography is flat to hilly and the land is heavily wooded. There are more than 30,000 trees within the Iowa City limits. A river bisects the area. The total area consists of approximately 12 square miles, and the population is about 42,000.

MATERIALS AND METHODS

In the area near the Hospitals, a bird fell from the trees exhausted by the constant fighting and bickering which is common in a starling roosting area. That particular bird was captured and caged, and after a period of rest it appeared to be normal. The captured starling gave fourth wild shrieks and squawks when it was handled. The "distress calls" of the captured bird were recorded by means of a Magnacorder full-track tape recorder at 7-1/2 inches per second, and an Altec No. 633A microphone. The bird was held by the wing tips, approximately one foot from the microphone, and allowed to utter its distress calls.

Before the recording was played back in the roosting area near University Hospitals, the campus police were summoned, and attempts were made to disperse and destroy some of the starlings with sawed-off 12-gauge shotguns. That method was effective in dispersing the birds for short periods of time, but after a few minutes the birds would return. The dead birds were collected for cultures and serologic tests. Autopsies were also performed for evidence of disease. Three composite soil and fecal samples were collected beneath the roosts for attempts at isolating H. capsulatum. No isolation attempts were made in the University Heights area.

The recorded "distress calls" were played back at dusk on three consecutive evenings for approximately one-half hour, during the time the birds were seeking roosting places. A Uher 4000S tape recorder, an Altec-Lansing 203B multi-cellular horn were used in playing a tape that had been re-recorded on

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half track at 3-3/4 inches per second. That combination produced approximately 108 decibels of sound at 100 feet. The horn was mounted on top an automobile, with the mouth pointing straight upward when the car was moving and pointed at the trees in the roosting area when it was parked. The best results were obtained when the tape was started just as the starlings began to gather, and when it was run intermittently for short periods of time.

RESULTS

In 1964, starlings had been roosting near University Hospitals for several weeks. Dead birds were found beneath the roosts each morning. Diarrhea was noted in several that were examined. Specimens collected from the starlings were negative for psittacosis, toxoplasmosis, acid-fas bacilli and enteric organisms. Intermediate coliform bacilli were isolated from the intestine of one starling. Attempts to isolate H. capsulatum from the fecal and soil samples were negative.

When the recorded "distress cry" was played, the starlings and other birds in the roosting area took flight immediately. After several intermittent playings of the tape, the birds were observed to be extremely nervous and to fly upon the slightest provocation. When the birds flew, they wheeled and circled in groups of several hundred. While the recording was played, they veered sharply and flew away from the sound. After the tape had been played on three successive evenings, very few starlings and sparrows appeared in the area.

The recorded "distress call" was tried again in the University Heights area. The same technic was used - i.e., the sound truck and was driven up and down the street pointed directly at the trees. After three evenings, the birds moved out of the roosting area in the University Heights section, and did not return.

DISCUSSION

Preventing massive bird roosts and accumulations of bird feces in populated areas is one method used for the prevention and control of histoplasmosis. The reservoir of saprophytic Histoplasma capsulatum consists of contaminated soil around bird roosts, old chicken houses and bat caves, and soil with high organic content from other sources. Naturally, infected birds or chickens have not been discovered, and efforts to infect chickens with H. capsulatum have failed [3]

Histoplasmosis is endemic in many areas of the United States. One such area is the land surrounding the Mississippi River and its tributaries. In Iowa, investigators conducting a geographical survey found that the histoplasma sensitivity of man ranged from 70 per cent along the southern border of the state to 2 per cent in the northern third. [4] In 1960, H. capsulatum was isolated from a child at University Hospitals, in Iowa City, and from the soil near a doghouse at his home, a southern Iowa farm. [5] In 1962, a major outbreak of histoplasmosis occurred in Mason City, Iowa, following the clearing of an area where thousands of starlings had chosen to roost during at least seven previous summers. There were 29 diagnosed clinical cases in human beings, and three deaths. [6] In 1963, a case of histoplasmosis occurred in an 11-year-old boy in Iowa. Epidemiologic studies revealed that six boys had camped benearth trees in which large numbers of starlings and blackbirds had roosted. [7] Approximately six months later, H. capsulatum was isolated from the soil collected near the campsite. [8] Recently, at Dexter, Missouri, 93 per cent of

more than 1,000 persons skin-tested for histoplasmosis were postive. An estimated 8,000,000 starlings roost near that city during the winter.[9]

According to Furcolow, an estimated 30,000,000 people have been infected with histoplasmosis, and 500,000 per year acquire the infection.[6]

Playing the "distress call" near University Hospitals repelled the birds from that area. Their new habitat was approximately half a mile distant, in a less populated area along the Iowa River (movement from "A" to "B," in Figure 1.) Several people expressed opinions that the birds had located in their vicinity! Some of the birds had scattered into small flocks. No attempts were made to repel birds from other sections of the city. The original site has been free of bird concentrations for 1 1/2 years.

In University Heights, starlings and blackbirds had congregated by the thousands for about one week prior to the use of the sound truck. Both bird species were repelled by the "starling distress cry." Robins in the area appeared to have been undisturbed. (Frings and Jumber [2] stated that the distress call seemed quite species-specific, and did not effectively repel Common Grackles or American Robins.) The birds migrated to an unpopulated wooded area one mile distant, near some railroad tracks and a golf course (see movement C-D in Figure 1). Four months later, the masses of birds had not returned to their original roosting sites. Normal migrations from an area must be considered when one assesses the movement of these birds. In larger communities, two or more sound trucks could be used to repel the starlings and related species, but the method may be impractical in a large city.

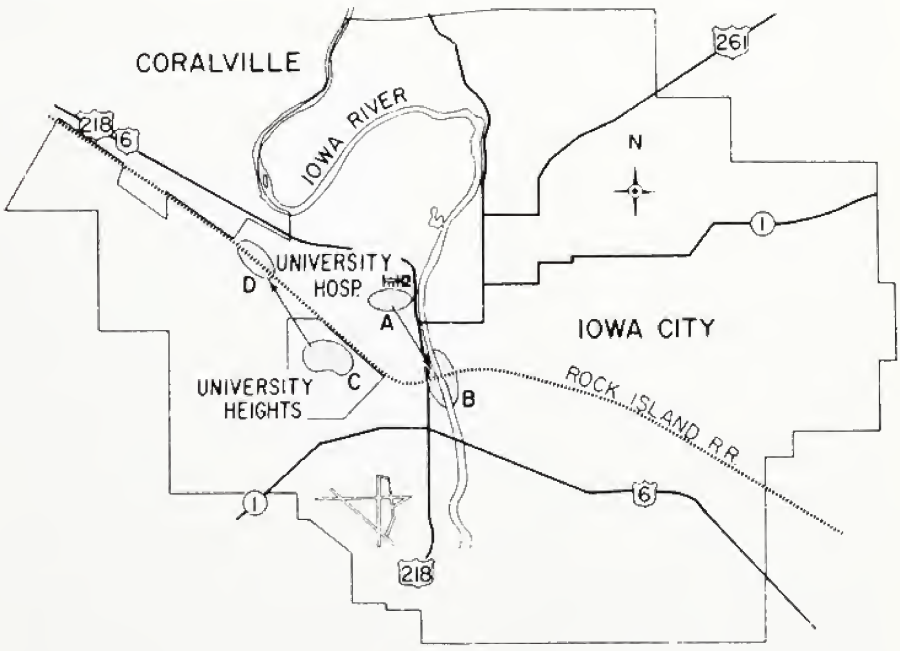

Figure I. Iowa City and vicinity. Movements of starlings occurred from A to B, and from C to D.

Citizens of a community are incorrect in assuming that birds roosting across the street are no problem of theirs, for the spores of histoplasmosis are airborne, and can be inhaled. The first course of action must be to remove the birds to unpopulated areas or locations, where other control is unnecessary or where eradication can be undertaken. Danger is involved in the use of explosives, shotguns and poisons in densely populated areas. A practical approach for the removal of starlings appears to be the amplified "distress call."

SUMMARY

Starlings have created health problems in many Iowa communities, as well as elsewhere in the United States, and they may continue to do so. Histoplasmosis is associated with repleated annual roostings of birds. Moving the birds from one location to another is not a final answer to the problem, but repelling starlings from concentrated population centers is necessary. An amplified recorded "distress call" has been used successfully as a repellent on two occasions in Iowa.

During the project described here, Dr. Diesch was a staff member in the Comparative Medicine Section of the U of I Institute of Agricultural Medicine. He is now at the U of Minnesota College of Veterinary Medicine, St. Paul. Dr. Long is chief of the Environment Toxicology Section of the U. of I. Institute of Agricultural Medicine.

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Field Reports

The spring migration was doubtless influenced by the unusual weather and the arrival of some species was delayed. The latter part of March was unseasonably warm with record highs and promising an early spring, but by mid-April the reverse was true, and the last half was cold with considerable snow in the third week. Cool weather persisted until the latter part of May when extremely warm weather was experienced for several days. The four-weeks' dry spell was broken on the 28th by a cold rain which lasted through the rest of the monh.

It was pretty generally agreed that the main migration of the smaller land birds occurred from the 10th to 14th of May. Subsequent, and smaller, waves were noticed on the 20th and 23rd. Some idea of the density may be gained from Fred Kent's list of 157 species from 9-13 May, and Ron Mullenburg's 139 and 140 on the 13th and 20th week-ends. Pete Petersen banded 159 individuals of 35 species on the 10th, and 123 of 34 species, including 57 warblers of 12 species, on the 23rd.

LOONS, GREBES, PELICANS. The only reports of loons are one seen by Mrs. Velie and Mrs. Hewitt on 4 May, (RH); one later in May at Little Wall L., (RM); a pair at Goldfield 20-24 April, (DR). Horned Grebes: 4 by Mrs. Velie and Mrs. Hewitt on 4 May; 23 May at Goose L., Greene Co.; 6 on 27 April, (PF); and a number of observations by various Des Moines watchers. Eared Grebes, usually scarce, were seen: at Ruthven, (DP); Blue L., (DH); Ogden, (JK); Big Wall L., (RM); and on a number of occasions in Des Moines. Western Grebes, even rarer, were: at Union Slough, 19 May; Little Wall L., 20 May, (RM); and 9 May at Des Moines Res., seen by Mrs. Margaret Brooke. Pelicans were observed in relatively small numbers: 19 at Coralville, (FK); 1 across from Dubuque, (GC); 5 at Union Slough; 25 on 18 April, (JF); and 50-60 at Black Hawk L. on 3 May, (DH).

HERONS. Great Blues seemed late and few; the only numbers were 68 in the week of 9 April, (PF), and 13-15 at Blue L., (DH). Little Blue were seen 31 March, (FK), and 16 April, (RH), both being early dates. American Egrets were: 5 in the week of 15 May, (PF); and 2 observations, (RM). Black-crowned Night Herons were "plenty", (RM), and 20 were seen at Brown's Slough on 13 April where 3 Yellow-crowned were seen on 2 May, (HM). Another Yellow-crowned was seen at Sweet's Marsh on 30 April by Nick Osness, (RH). American Bitterns were thought more than usual, (RM).

SWANS, GEESE. A Whistling Swan on 27 March had also been seen the week prior by Tom Kent, (FK). Badger L. had 14 late in March, (DH), but there was none this spring at Union Slough. Geese were thought a week or two late and went through fast, (DH). Dunbar Slough and Goose L. had 30,000 early in April, with 2,000 at Goose L. as late as 7 May, (JF). The peak at Union Slough was the week of 19 March, with 2,200 Canada, 230 White-fronted, and 4,060 Blue and Snow. A large flight of Canada, Blue and Snow on 15 May was late, (EG). There were 25-30 Hutchins's on Badger L. on 24 March, (DH), and 2 were on the Des Moines Res. on 27 March, (MP). The Blue and Snow population was thought larger than usual, (FK); 5,000 were in the fields in the week of 15 March, (DG); and 1,000 were seen on 27 March, (EC). A late Snow was at Goose L. Hamilton Co., on 17 May, and a Canada north of Ames the same date, (JR). Two Snows on 25 May were even later, (EG). A good-sized flock of White-fronted was seen and photographed at close range by Bob Vane and Fred Kent on 25 March near Onawa.

DUCKS. The migration was generally thought good. The rare Cinnamon Teal was at Wheatland on 15, 17, and 22 April, (EC). Shovelers were thought up considerably, (MK). Redheads were in pretty fair numbers, (RH). Canvasbacks were few, (FK), and very scarce, (HR,WHB), but there were 2,830 at the peak, (PF). Common Mergansers were many, and Red-breasted were the most in years, (JF).

HAWKS. A flock of 11 Turkey Vultures was seen at Ledges State Park on 15 May, (MF). Black Vultures are reported as having been seen in the Hamburg area, (EG). Goshawks: 1 on 21 May (RH), and 27 March and 1 April, (EB). A Sharp-shinned on 19 March was early, (PP). The Red-tailed have 4 active nests in the township, (GB), and 7 were seen 11 March at Sweet's Marsh, with 2 Red-shouldered, (the only report), and 3 Rough-legged on the same day, (RH). Broad-winged are nesting at Brookside Park, (JR), and The Ledges, (MS). There were thought a few more Swainson's than usual, but not many Rough-legged, (EB), but there were more of the latter during February and March, (DG). Golden Eagles were seen 25 and 31 March, (HM). An immature Bald Eagle on 23 March, and an adult the following week were reported from Union Slough. A Peregrine Falcon was seen at Goose L. on 5 May, (JF). Lots of vacant Red-tailed territories, (DR).

PRAIRIE CHICKENS, BOBWHITES, PHEASANTS, PARTRIDGES. Prairie Chickens continue to be reported occasionally, (EG). Bobwhites: several seen for a first spring record, (JF), but, apparently none, (EB). Ring-necked Pheasants were thought abundant by all reporting. Chukars which were released several years ago are reported from two widely separated areas, (EB, GB). Six Gray Partridges were seen 25 February, (PF), and several sightings, (RM).

SHOREBIRDS. Lack of suitable habitat has held down the number of observations, (FK, JK, WHB). A Common Gallinule was at Rice L. 26 April, (MK). Piping Plover, several, (JF, JR). Killdeer: unusually scarce, (DG); down, (RM); but plentiful, (MK). A number of reports of flocks of from 10 to 200-300 Golden Plover, but only two reports of Black-bellied: 6 on 21 May, (FK), and 7 on 20 May, (GC). A Ruddy Turnstone 7 May, (MS). Nick Osness found a Woodcock on 12 May, (RH), and Fred Kent learned of a nest at Conesville which was inadvertantly stepped on. A Snipe on 23 March was either an early migrant or a wintering bird, (PF). Upland Plovers and Willets were mentioned by several. The rarest species found this spring was the Knot. One was seen on 5 May at Goose L., (JF), and a flock of 36 were well seen at Little Wall L. on 20 May, (RM). Flocks of Dunlins were reported, (FK, GC, RM). Two Western Sandpipers were seen 13 May at Goose L., Hamilton Co., (JR). Marbled Godwits, usually rare, were seen: 22 April, 20 and 21 May at Goose and Little Wall, (JR, RM, MP); 23 April and 25 May in Green Co., (JF); and 27 April at Union Slough. Hudsonian Godwits were seen by a number of observers, some of whom commented upon their relative abundance. Sanderlings were mentioned twice, (GC, JF). The only Avocet was seen at Dunbar Slough on 5 May, (JF). Wilson's Phalaropes were seen in extraordinarily large numbers; one report mentioned 200-300 on New Lake the first week in May, (DH). There were even three reports of the Northern Phalarope: 20 May in Polk Co. by Mrs. Peasley; 3 on the same date, (RM); and 10 May, (HM).

GULLS, TERNS. A late Herring Gull was seen on 23 May, (PL). Ring-billed were common during April, (FK). Franklin's Gulls on 19 March were early, (PF), while others reported them from 6 April to 9 May. Bonaparte's were seen in a number of places, 1 on 31 March at Goose L., Hamilton Co., being early, (RH). Caspian Terns were observed (RH, JR, FK, GC). Black Terns were unusually

abundant, comments ranging from "hundreds" to "thousands".

DOVES, CUCKOOS. An early Mourning Dove was seen on 14 March, (KH), on 28 April there was a wave lasting all day, (JK). Cuckoos were late, 27 May being the first, sp? (FK). Both species were seen on that same date, (RM).

OWLS. Great Horned and Long-eared are down with only 1 of the latter seen, (EB). Short-eared: 1 to 10 seen regularly in March and until 18 April - more in late spring than in other years, (DG). Saw-whet: seen on 11 and 18 March, (RH), and 1 banded 12 March at Ames by Dick Knight, (PP), all rather late dates. Great Horned and Screech Owls had a good nesting season, (DR).

WOODPECKERS, FLYCATCHERS. Yellow-shafted Flickers: about 80 seen on a trip to Goose L., (RH); and, more plentiful than ever, (MK). Redheads still seem down, (JK). Large numbers of smaller flycatchers came with the warblers. E. Kingbird: 100 seen on 10 May, (DG), but not seen in Des Moines in numbers until the 17th by Bill Boller. Western Kingbird: 1 at Big Wall L. on 20 May, (RM), and 1 at Goose L., (JF). Say's Phoebes, about even with last year's poor crop, (EB).

LARKS, SWALLOWS. Horned Larks: very few, (MK). Tree Swallows: very large flocks seen for days in Des Moines. Bank Swallows: 3 nests only a few feet from bridge where a large number of Cliff Swallows are seen with 16 nests started, (GB). Purple Martins appeared 1 April, but there are few per house, (GB).

JAYS, MAGPIES, CROWS. An oversupply of Blue Jays, (MK). Mrs. Hanna has learned indirectly of a Magpie which was seen in the lake area early in May following a storm. The source of the report is considered reliable. Crows have several times been seen to kill and eat field mice, (JK).

NUTHATCHES, WRENS. Red-breasted Nuthatch: seen 14 May, (JR), and banded 24 May, (PP), both rather late dates. A Winter Wren was noted on 8 April, (RH). Bewick's Wren: 1 on 31 March was his first in 5 years, (FK), and another was seen on 10 May, (JK). Carolina Wrens are evidently becoming re-established with some at Burlington, (PL), and one on 2 April, (FK), and one collected at Davenport 7 May, (PP). They were also found at Goose and Elm Lakes, the latter being rather far north.

MIMICS, THRUSHES. Mockingbirds are nesting at Hamburg, (EG), but none located at Pleasantville where usually found, (GB). Robins: seem down, (JK), but, abundant as usual, (MK). On 2 April, 13 were killed by hail in only two yards in Sioux City, (DH). Press reports mentioned heavy mortality in a western Iowa town following Elm spraying. Hermit Thrush, few, (MK). Swainson's and Gray-cheeked were extremely numerous for some weeks. Bluebirds: not too many, (PK), very scarce, (MK); fewer, (GB).

KINGLETS, PIPITS, WAXWINGS, SHRIKES. Golden-crowned Kinglets scarce, (MK, WHB). Ruby-crowned were thought unusually numerous by many observers, and early, (FK). Water Pipits were scarce with only two singles seen, (DG). Two Bohemian Waxwings were seen at Jesup on 5 March by Mrs. Williams, (RH). Loggerhead Shrikes were thought scarce, (EB), but 5 active nests were found, (GB).

VIREOS, WARBLERS. Reports on the vireo migration are conflicting: almost none, (JF); way down, and the few migrants were late, (DR); while Des Moines had few other than the Solitary. Vireos common, all species, (JK); and good vireo population, including 1 White-eyed, (FK). A White-eyed was banded 1 May and another collected 8 May, (PP), and another observation on 16 May, (MK). It is practically unanimous that the bulk of the warblers arrived between 10 and 16 May with smaller waves later. Worm-eating: seen 6 May by Nick

Osness, (RH), and 10 May, (HM). Black-and-white: best flight ever seen, (EB). Magnolia: few more than usual, (FK); down considerably, (MK); nothing like last year's at Des Moines. Myrtle: no large numbers early as usually, but later with other species, (FK). Blackpoll: missing, (MK). Pine: seen 25 April by Nick Osness, (RH). Redstart: down, (MK), but numerous for a day or two only, (WHB).

HOUSE SPARROWS, ICTERIDS, FINCHES. House Sparrows are still down, (DH). Meadowlarks: early on 28 February, (GB), and 4 March, (KH). Yellow-headed Blackbirds were at Conesville for the first time in several years, (FK). Orchard Oriole: 1 first-year male was the only one seen, (GB), and 1 seen (JK). Rusty and Brewer's Blackbirds: seen following the plow early in April, and 10 Brewer's from 20 to 25 April, (DG). Grackles: hordes seen everywhere in Iowa, (DH), have become a nuisance in Des Moines. The sparrow migration was thought sub-par, (PK), and likewise except for White-throat and Song, (MK). A good wave on 4 May of Clay-colored, Harris' White-crown, White-throat, and Song, (EG). Rose-breasted Grosbeaks seem up again, (PL). A late Pine Siskin on 20 May, (PL), but none, (JF). Goldfinch, best year every, (DR). Lark Buntings, 15 on 23 May, (EB). LeConte's Sparrow, seen on 16 April, Goose L., Hamilton Co., (JR). Juncos were still around during early May, (PL), and as late as 21 May, (FK). White-crowned: a slight increase, (EB), and, relatively numerous in Des Moines. Fox Sparrow: an early observation on 14 March, (HM). Lapland Longspurs: 200-300 were seen for several days in the first week of March, (DG); and 200 were seen by Glenn Bloomfield on 19 March, (RH).

Contributors: Mrs. Gladys Black, Pleasantville; Eldon Bryant, Akron; Esther Copp, Wheatland; George Crossley, Dubuque; John Faaborg, Jefferson; Paul Ferguson, Union Slough; Mrs. Edwin Getscher, Hamburg; Don Gillaspey, Lamoni; Mrs. Darrell Hanna, Sioux City; Russell Hays, Waterloo; K. L. Huehn, Ames; Milford Keeler, Mason City; Fred Kent, Iowa City; Jim Keenan, Ogden; Pearl Knoop, Marble Rock; Peter Lowther, Burlington; Howard McKinley, Russell; Ron Muilenburg, Webster City; Mary Elizabeth Peck, Des Moines; Peter C. Petersen, Jr., Davenport; Don Peterson, Ames; Jim Rod, Ames; Dean Roosa, Goldfield; Myron Swenson, Ames. WOODWARD H. BROWN, 4815 Ingersoll Ave., Des Moines, 50312.

General Notes

REPEAT ON SNOWY OWL AT LAMONI--For the second winter, we have been fortunate to observe a Snowy Owl here. On December 3, 1966, one was observed on a telephone pole one mile north of Lamoni in open farm land. It later flew to a fence post about 300 yards out in the field. It stayed there about an hour and was observed by Jim and Donald Gillaspey, Mrs. John Reynard, Mrs. E. H. Rauch, and Mr. and Mrs. Ralph Silver. -- J. DONALD GILLASPEY, Rt. 1, Lamoni.

RAVEN SIGHTED NEAR MASON CITY--On December 28, 1966, as Paul Bailey and I were driving from Clear Lake to Mason City, we sighted a large, dark-colored bird perched on a power line pole about two miles west of Mason City on highway 106. Upon closer investigation, this proved to be a Raven (Corvus corax). It was observed with 8x binoculars both in flight and perched. Its flight pattern, size, and rounded or wedge-shaped tail distinguished it from nearby Crows. -- DEAN M. ROOSA, Goldfield.

ONE DAY EAGLE COUNT, FEBRUARY 18 OR 19, 1967--Areas covered were as in former years, mostly the Mississippi River from the source to below St. Louis, also most rivers in Illinois and some refuges. Some reports are by pools and some by lock and dams. Counts made by foot, car, boat and plane. The area from the Lock and Dam #12 at Bellevue, Iowa to near Burlington, Iowa was covered by car and plane. Pete Petersen and Dr. DeDecker flew the area on Sunday the 19th, Richard Nord, Biologist with the U. S. Fish & Wildlife Service flew the same area to Rock Island, Illinois on Saturday the 18th. A careful comparison was made. Of the many people and groups desiring of credit, special mention must be made of the St. Louis Audubon Society. They had about 100 people out in five groups.

Locations:	Adults	Immatures	not aged	Total
Pools 4, 5, 5A & 6	37	3	0	40
Pools 7 & 8	1	0	0	1
Pool 9	7	3	0	10
Pool 10	8	0	0	8
Cassville, Wisc.	52	7	0	59
Pool 12 to near Burlington, Ia.	321	71	8	400
Lock 18 to Shokeken	25	15	0	40
Lock 19	9	4	0	13
Lock 20	19	7	0	26
Lock 21	4	1	0	5
Lock 22 to 25	48	22	17	87
Pere Marquette Park	9	12	0	21
Calhoun Refuge	13	32	0	45
St. Louis	5	2	0	7
TOTALS	558 (75.7%)	179 (24.3%)	25	762
Illinois River				
Hennepin to Peoria only	5	2	0	7
Crab Orchard Refuge	2	3	0	5
Chautauqua Refuge	5	2	3	10
Cass County (Ill. River)	20	2	0	22
Totals	590 (75.3%)	188 (24.7%)	28	802

ELTON FAWKS, 2309 Fifth Ave., Moline, Illinois

ANHINGA, THIRD RECORD FOR IOWA--On April 5th, 1967, I was at Union Grove Lake near Gladbrook, Iowa, and saw an Anhinga, or Water Turkey as it is sometimes called. It was the middle of the afternoon, on a cloudy day, that this huge black bird flew to the lake from the South. It flew directly in front of me, skimming over the treetops. Its neck was long and snake-like; the tail was very long, and fan-shaped. It flapped its wings then soared, and repeated this proceedure during the five to eight minutes it remained at the lake. As it was almost overhead, I was unable to see the silvery patches on the fore part of the wings, but the light area of the lower bill was clearly seen. Anhingas are found in cypress swamps and rice fields in the South, and according to Roger Tory Peterson, are found as far north as Arkansas, Tennessee and southern Illinois. As Iowa is out of its territory, I checked with the 1963 IOWA BIRD LIFE "Check List of Iowa Birds" compiled by Dr. Martin Grant, and found that Anhingas are listed as being in Iowa two times, in 1904 and 1953. The severe storms we have had this spring might explain it being found out of its usual territory. -- MRS. JOHN EHLERS, 305 Chestnut St., Reinbeck.

PLEASANTVILLE MOCKINGBIRDS, 1966--I would like to report that we had four pairs of Mockingbirds in the 2 wp. summer of 1966. Two deserted nests containing eggs were located and another nest produced 3 fledglings. We were unable to find the nest of the fourth pair.

Cause of nest desertion was not determined and no second nestings were located. The pair of Sparrow Hawks might have been considered cause of desertion but they nested in this field in 1965 while the Mockers successfully reared first and second broods. -- RUTH SUMMY, 804 Jackson St., Pleasantville.

WE SAW AN OWL HOOT--About 7:30 A.M. on a day in Oct., 1966, as our family was preparing for a late breakfast we heard the sonorous call of a Great Horned Owl somewhere south east of and close to our house. Since there are no trees nearby in that direction I peered out the window to see where it was located. The hooting continued at regular intervals and I soon located the bird perched on the "crow's nest" at the upper end of the outside ladder on our silo. After a few minutes the owl moved to the top of the roof of the silo and continued hooting a short intervals. His next move was to top of the utility pole in our house yard and continued his hooting at a steady rate. His next move was to a small Moline Elm a few yards outside our kitchen window where he was the floor show as we ate breakfast. Since this was the first time any of us had watched this species in the process of hooting we were treated to a lesson in bird lore. Instead of the usual upright position of the Horned Owl this bird would when uttering his call would hold his body in a horizontal position with neck outstretched with the neck feathers ruffled and tail held stiffly upright. This action reminded me of a barnyard chicken about to do battle.

After hooting in our elm for a few minutes the owl moved to the grove of the neighbor just across the road where he hooted a few times and then held his peace. I suspect he spent the day there because the Blue Jays made furious outcries at various times during the day. I can offer no explanation for the frenzied hooting in broad daylight by this individual but was happy to have witnessed the hooting process. -- ELDON BRYANT, R.R.1, Akron.

Book Reviews

ATTRACTING BIRDS: FROM THE PRAIRIES TO THE ATLANTIC--Verne C. Davison--Thomas Y. Crowell, New York--252p., 13 illustrations--1967--$6.75.

Another aid for the beginner who is establishing a feeding station or planting to lure birds onto his property. Feeder and bird house designs are illustrated and dimensions are provided. A series of lists indicate the common species which can be attracted to a feeder by various food items. The bulk of this book consists of a list, in alphabetical order, of species giving colloquial names as well as the accepted A. O. U. name, the principal food, nesting sites and suggestion for attracting the species. It is unfortunate the author did not follow A. O. U. CHECKLIST order, encouraging the novice to learn the order but still allowing him to use the index. The final major section lists plants, again alphabetically with the birds which they attract. The concluding sections list scientific names of birds and plants, alphabetical by genus, and include a list of reference books on birds.

The information presented appears to be correct and is stated concisly. Libraries may wish to consider this work as it answers many questions frequently asked by the general public. Advanced birders would probably find it contains little in the way of new material or a really new approach. ed.

OKLAHOMA BIRDS--George Milsch Sutton--University of Oklahoma Press, Norman, Oklahoma--674 p. with one color plate, 28 sketches and two maps--1967--$9.95.

An excellent regional work stressing ecology and distribution. The 394 species positively recorded and may additional species not as yet collected are included. No attempt is made to provide other data, which continues the trend of recent state bird books. Dr. Sutton has lived in Oklahoma for fifteen years and during the previous twenty years made many visits to the state. At the beginning of the text on each family the author describes the characteristic of the family.

Anyone who plans to visit Oklahoma for serious field work or who collects the various state bird books will certainly wish to add this volume to their library. The binding is of very excellent quality. ed.

THE BIRDS OF GUYANA--Dorothy Snyder--Peabody Museum, Salem, Mass.--308 p., 1 map--1966--$6.00.

A very concise check-list of the 720 species found in Guyana (formerly British Giuana). The author describes the plumage of each species, also including data on the voice where the information is known, and the distribution both within the country and throughout the birds range. This country is slightly larger than South Dakota and lies on the northern coast of South America, just east of Venezuela. Much of the area is covered by dense vegetation and the rivers provide the best means of transportation, the hard road network covers only 160 miles. The author describes the climate, ecology, and ornithological history. Forty-two species are on the hypothetical list, so perhaps as many species inhabit this country as are found in the United States.

For the growing number of ornithologists the nearest frontier for truly exploratory work lies to the south. In the near future many more graduate students will work in the remote areas, and more vacations will be taken to South American countries for bird watching. ed.

THE WATCHER AT THE NEST--Margaret Morse Nice--159 p., many sketches--reprinted by Dover Publications, New York--paperbound--1967--$1.50.

A sequel to Dr. Nice's two volume life history study of the Song Sparrow. She desbribes in a very readable manner the activities of one pair of Song Sparrows over several years. Several chapters are devoted to other birds studied by the author. This book shows the novice bird watcher the joys of careful observation and alerts them to the valuable knowledge that can be learned by studying common birds which live and nest upon ones own property. The observations were made in Oklahoma and Ohio, so the birds and localities mentioned will be familiar to Iowans. This book will be of interest to young readers as the style is easy to follow. ed.

HISTORY OF THE EXPEDITION UNDER THE COMMAND OF LEWIS AND CLARK--Edited by Elliott Cones--reprinted by Dover Publications, New York--3 volumes, 1364 p., 8 maps, 2 tables--1967--paperbound--$2.25 each volume.

The complete history of this most important expedition, containing many notes on the wildlife encountered. Those unfamiliar with the former bird life in western Iowa will have a glimpse of it on these pages. From the standpoint of

geography and ethnology it contains a wealth of valuable material. For a school library it makes a fine source of historical reading for students. ed.

TRAVELS OF WILLIAM BARTRAM--edited by Mark Van Doren--reprinted by Dover Publications, New York--448 p., 13 illustrations and maps--paperbound--$2.00.

Another book for the historically inclined. Bartram spent five years observing nature in what is now Florida, Georgia and the Carolinas in the late eighteenth century. As he was a scientist, the first one to travel extensively in this area, his notes make very interesting reading. He provides us with a good view of wildlife uneffected by man. ed.

CONTROLLING POLLUTION--ed. by Marshall I. Goldman--175 p.--Prentice-Hall Inc., Englewood Cliffs, N. J.--1967--$4.95.

While not specifically on birds, the subject of this book untimately affects birds, perhaps much more than we usually believe. This collection of essays, written by a wide variety of authors, probes the subject from many sides. Among the facets dealt with are air pollution, water pollution, possible government controls, and economic incentives for pollution control. With the projected population increases we face, every person, especially conservationists, should be fully aware of this problem. A section deals with pollution problems in the Soviet Union, which tend to parallel ours. This book gives one a good background on our struggle to combat pollution. ed.

AN INTRODUCTION TO ANIMAL BEHAVIOR--Peter H. Klopfer and Jack P. Hailman--Prentice Hall, Englewood Cliffs, New Jersey--297 p.--1967--$6.75.

A well done composit volume on ethology, behavior from a biological viewpoint. The first section deals with the early work beginning with Darwin. The authors then discuss the basic structure of present day ethology, primarily dealing with the work of Lorenz and Tinbergen. They then relate other aspects, such as physiology, social behavior and psychology to ethology. The final section summarizes the status of our knowledge today and the appendix lists the principal journals of animal behavior. The index is presented in three parts, by author, by subject, and by animal.

The organization and style of this book are basically that of a textbook, but the importance of ethology to all the biological sciences, primarily the studies of the higher forms, leads the serious student to keep himself abreast of this field. Much background is assumed by the authors of many articles in our leading ornithological journals, and this volume will aid one greatly in their understanding. ed.

NEW PRINTER - Due to the destruction by fire of the Mt. Vernon Hawkeye-Record printing plant in early May it has become necessary to obtain the services of another printer. We have been most fortunate in finding the Monticello Express, Monticello, Iowa. Their plant prints offset, which accounts for the change in the appearance of our pages. It will be possible to use more pictures than in the past as they will not increase the cost, but authors will not see a proof before printing.

Our thanks go somewhat belatedly to Steve Sampson of Bawden Bros., Inc., Davenport, for providing us with the fine Wood Duck cover for 1967. ed.